

THE comet was examined spectroscopically here last night at 11.30. The nucleus gave a bright continuous spectrum, while the coma and brighter portions of the tail gave the three least refrangible hydrocarbon bands superposed on a faint continuous spectrum. On moving the slit of the spectroscope towards the fainter part of the tail the bands died out, leaving a faint continuous spectrum, which again gradually faded away as the end of the tail was approached. I have not measured the position of the bands, but they are sensibly the same as those from an alcohol flame. GEORGE M. SEABROOKE

Temple Observatory, Rugby, June 28

NOTES

THE Lords of the Committee of Council on Education, in reply to an application for aid to science teachers attending the classes of the Mason Science College two days a week, agree to pay three-fourths of the fees for the chemical and physical laboratories and for biology and histology, for a limited number of teachers, on condition that satisfactory terminal reports of their progress (ascertained by examination) and of their conduct be received at the end of the Michaelmas, Lent, and Easter terms. Applications for the privilege must be made to the Secretary, Science and Art Department, not later than August 31. The selection will rest with that Department. One-fourth of the fee for the whole session must be paid by the student on entrance; and the remaining three-fourths will be paid by the Department in equal instalments at the commencement of each term, if the reports are satisfactory.

THE fine library of the late M. Chasles is to be sold by public auction between June 28 and July 18. It contains no fewer than 3936 works, or about 15,000 volumes, and is one of the most complete libraries of mathematical works in existence. The precious manuscripts and various works of history and philology will doubtless be eagerly sought by amateurs. There is, among other works, a Geography of Ptolemy of Alexandria, printed at Rome in 1490, containing geographical maps which are the first engraved with copper plate (1478). The collection includes eighteen different editions of Archimedes, and the works on Euclid number sixty-six. The astronomical works of the sixteenth, seventeenth, and eighteenth centuries are fully represented, as also those on astrology, alchemy, &c.

THE programme of an excursion by the Geologists' Association to the Lake District, from Monday, July 18, to Saturday, July 23, has been issued. Keswick will be the centre of operations till Friday, when the Grasmere and Ambleside district will be visited. Saturday will be given to Windermere.

WE have also before us an attractive programme of a marine excursion to Oban and the West Highlands of Scotland by the Birmingham Natural History and Microscopical Society. The party leave Birmingham on the evening of July 1, and go direct by Greenock and the Kyles of Bute to Oban, which is made the centre for various excursions by sea or land, till July 12. Facilities for dredging will be afforded. The party will include some able naturalists.

IN a recent issue we gave some account of the Ben Nevis Observatory (so-called). The system has been in operation since June 1, and the daily observations by Mr. Wragge are published in the *Times*. This gentleman begins his magnanimous toil up the hill every morning at 5 o'clock. After spending about an hour on the top (9 to 10) in taking observations with the scanty stock of instruments fixed on stands protected by a stone screen, he gets home again by about 2 in the afternoon. In the early part of June the path up the mountain was often deep in snow and enveloped in mist, but Mr. Wragge has marked out the

track with a succession of cairns. Anything more disgraceful to British science than this state of things, as representing our present achievement in the way of regular mountain-observations, it is difficult to conceive! A comparison with what has been accomplished in other countries, notably America, where well-equipped observatories are now to be found at vastly greater heights than the top of Ben Nevis, is sufficiently humiliating for us.

THE May number of *Nature* gives the first of a series of papers, by Prof. Axel Blytt, on the "Theory of the Immigration of the Norwegian Flora at Different Earlier Geological Periods." In this paper the author, who is well known as the highest authority among Scandinavian botanists, describes the character of the flora, which, considered generally, is represented by only a small number of genera. At an elevation of 4000-4500 feet above the level of the sea the interior and southern districts exhibit dwarf forms of the willow and birch, with juniper; between 3000-3500 feet the first birch woods appear in the same districts, while firs and pines begin a few hundred feet lower. Here and there the high and barren fjalds of the interior near the glaciers are broken by the occurrence of blooming oases of plants of Arctic continental forms, which, after having lain buried for months under the snow, awoken to new life with the return of the summer sun. To the interior also belongs a boreal flora of small deciduous trees, including the oak, ash, alder, lime, &c., which penetrate as far as 2000 feet, and in the Inner Sogu district occur the only woods of elm and wild cherry to be found in Norway. The subboreal belt, including several *Spiræas*, *Fragaria collina*, *Artemisia campestris*, *Thymus chamadrys*, &c., is limited to the Lower Silurian formations in the eastern districts. The western coast-lands between Stavanger and Christiansund are the habitats of an Atlantic flora, including *Erica tetralix*, and several of the rarest Norwegian plants, but here *Calluna*, *Sphagna*, and *Carices*, with turf beds, constitute the principal forms. The most southern littoral belt near Christiansund presents a sub-Atlantic flora, while a number of sub-Arctic forms appear scattered over the whole of Norway. Prof. Blytt considers that the sporadic occurrence of the various continental and insular forms of the flora of Norway points to the conclusion that the climate has undergone various secular changes since the Glacial period, the continental forms having immigrated during the continuance of drought, when the peninsula was connected with neighbouring continents, while the appearance of the insular forms was contemporaneous with rainy periods.

THE decree appointing sixty-five French members of the Congrès d'Électricité has been signed, by the President of the Republic, and will soon be published. Foreign Governments will appoint all their own members. Reporters and the public will not be admitted to the Congress; an official report will be published by the general Committee. Some French papers have already condemned such practice in strong terms. No jury-men will be appointed by the exhibitors, and the latter will have no direct influence on the verdicts. It is proposed to consult the Congress on certain measures of general interest, e.g. the adoption of electrical units. The electric railway station will be placed inside the building. For want of time, no viaduct will be constructed, and the rails will be laid on the common roads. The space allotted to English exhibitors on the ground-floor has been largely occupied. In addition to this space each of the British light exhibitors will have on the upper floor a special saloon to illuminate with his own system. The right of publishing and selling the French Catalogue has been purchased by the printers and publishers of *La Nature*, rue de Fleurus. The sale of scientific papers will be authorised, but will take place exclusively through their agency.

IN an old book—"Thomæ Bartolini Acta Media et Philosophica Hafniensia Anno 1674, 1675, et 1676," Herr Budde has

come upon a passage which bears on the history of the diving-bell. Bartolini there writes: "Singulare instrumentum invenit descriptisque Franziscus Kesler Wetzlariensis in secretis suis Oppenheimii editis 1616, capite VI., quod Wasserharnisch vocat, quo tuto ambulemus in fundo maris, legamus ibidem, scribamus, edamus, potemus, cantemus, sine periculo vitæ longiori tempore, omnia pergamus, thesauros eruamus et abscondamus," and so on. Of the two figures one represents the interior—a rough framework of wood, having straps with which the diver secures himself in the bell; the other (see *Wied. Ann.*, No. 5) shows the exterior, an inverted vessel of tumbler shape having five or six small circular windows at the top, while the man's legs project

little below. According to Poggendorff (it is stated) the oldest book in which the diving-bell is mentioned is of 1664, and it refers to a work of Taisnier (as the source of information), the date of which Poggendorff does not give.

WE learn from *L'Électricité* that there is being made near the Palais de l'Industrie a basin, 16 metres in diameter, which will be put at M. Trouvé's disposal for exhibition of his boat driven by electricity. In the centre will be an electric light on a pedestal. At various points within the Palais de l'Industrie will be placed (under the direction of MM. Ranvier, Berger, and Fontaine) models of statues as supports for the electric light in its various forms.

The Municipal Council of Philadelphia has granted to a Company the right to place 3000 kilometres of wire on posts for telephonic purposes. No tax is imposed, but a limit is set to the subscription. The fire-telephones in Berlin have proved so useful, that the municipal authorities are increasing the number. In Paris the development of telephonic lines amounted to 9121 kilometres, the extent of wire being double this.

AN electromagnet of enormous dimensions has lately been made by Herren von Feilitzsch and Holtz for the University of Greifswald. The case is formed of twenty-eight iron plates bent into horseshoe shape, and connected by iron rings so as to form a cylinder 195 mm. in diameter. The height is 125 ctm.; the total weight 628 kilogr. The magnetising helix consists of insulated copper plates and wires having a total weight of 275 kilogr. (For further details see *Les Mondes* of June 23.) With fifty small Grove elements the magnet will fuse in two minutes 40 grammes of Wood's metal in the Foucault experiment. The plane of polarisation is rotated in flint glass after a single passage, &c. The core of the largest magnet hitherto known, that of Plücker, weighed 84 kilogr. and the wire 35 kilogr.

MR. W. MATTIEU WILLIAMS, F.R.A.S., F.C.S., author of "The Fuel of the Sun," "Through Norway with a Knapsack," &c., has been appointed to the management of the Royal Polytechnic Institution, Limited, and will commence his duties at once.

MR. H. C. RUSSELL, Government astronomer, has just sent home his report on the results of rain and river observations made in New South Wales during 1880. In regard to the latter part of the subject Mr. Russell remarks that it seems impossible to doubt that an unlimited supply of water passes away underground, more indeed than would suffice to make the western districts of the colony a well-watered country, and all that is wanted to make the supply available is a judicious use of the boring-rod. The report is illustrated by an interesting rainfall map of New South Wales, and another on which are given curves showing the height of the western rivers during the year.

FOUR shocks of earthquake occurred at Agram on the night of June 22-23; rather severe shocks were felt on June 22 at Bohyhad (10.20 p.m.) and Szegszard (11 p.m.) in Hungary.

A SKELETON of an *Ursus spelæus* was found this week in a cave near Spanheim (Germany).

THE arrangements for the International Medical and Sanitary Exhibition are now complete; the offices are removed from the Parkes Museum to the Exhibition Buildings at South Kensington. The Right Hon. Earl Spencer, Lord President of the Council, has accepted the office of president, and will be present at the opening ceremony on Saturday July 16. The Exhibition is to be complete on Wednesday, July 13, and the judges will make their examinations for the awards on the two days previous to the opening.

IN consequence of the increasingly numerous cases of myopia developed in French schools through bad arrangement of seats and distribution of light, the Minister of Public Instruction has nominated a commission named *De l'Hygiène de la Vue dans les Ecoles*, whose object will be to study the influence of the material conditions of school arrangement on the progress of myopia, and to discover the means of counteracting the evil.

A CAREFUL study of the chief methods in use for the chemical examination of potable water, so far as organic matter is concerned, has been undertaken by order of the U.S. National Board of Health. Medical men throughout the country, and others interested in sanitary matters, have been requested to report to Dr. Mallet of Virginia University any well-marked case of disease from impurities in drinking-water, and to forward samples of such water.

THE additions to the Zoological Society's Gardens during the past week include two Red-handed Tamarins (*Midas rufimanus*) from Demerara, presented by Mr. John Peque; a Stanley Crane (*Tetrapteryx paradisea*) from South Africa, a Common Chameleon (*Chameleon vulgaris*) from North Africa, presented by Mr. J. Sexton; two Laughing Kingfishers (*Dacelo gigantea*) from Australia, presented by Sir Hubert Sandford; a Lead-beater's Cockatoo (*Cacatua leadbeateri*) from Australia, presented by Mr. Martin Smith; a Marsh Harrier (*Circus æruginosus*) from Malta, presented by Mr. J. Wolfe Murray; a Lesser Kestrel (*Tinnunculus cenchris*), South European, presented by Mr. William Brodrick; an Undulated Grass Parrakeet (*Melopsittacus undulatus*) from Australia, presented by the Countess of Ellesmere; two Gerbills (*Gerbillus*, sp. inc.) from Algeria, presented by M. Alphonse Milne-Edwards; a Long-headed Snake (*Xenedon rhabdocephalus*), a d'Orbigny's Snake (*Heterodon d'Orbigny*) from South America, presented by Dr. A. Stradling, C.M.Z.S.; a Red-throated Amazon (*Chrysotis collaris*) from South America, deposited; three Moustache Monkeys (*Cercopithecus cephus*), a Diana Monkey (*Cercopithecus diana*), a Talapoin Monkey (*Cercopithecus talapoin*), two Green Monkeys (*Cercopithecus callitrichus*), a White-collared Mangabey (*Cercocebus collaris*), a Grey-cheeked Monkey (*Cercocebus albigena*), two Water Chevrotains (*Hyomyschus aquaticus*), a Crested Guinea Fowl (*Numida cristata*) from West Africa, a Tamandua Anteater (*Tamandua tetradactyla*), a Pebá Armadillo (*Tatusia peba*), a Red-billed Toucan (*Ramphastos erythorhynchus*) from Brazil; a Hawk's-billed Turtle (*Chelone imbricata*) from the East Indies, a Puff Adder (*Viper arietans*) from Africa, purchased; a Horned Tragopan (*Cerionis satyra*), an Impeyan Pheasant (*Lophophorus impeyanus*), bred in the Gardens.

BIOLOGICAL NOTES

RHYTHMIC CONTRACTION OF VOLUNTARY MUSCLES.—It has been recently observed by Herr W. Biedermann (Vienna Acad. *Sitzungsberichte*) that if the sartorius muscle of a curare-poisoned frog, prepared at a low temperature, be put in a solution of 5 gr. NaCl, 2 gr. Na₂HPO₄, and 0.4 to 0.5 gr. NaCO₃ in 1 litre water, it shows, after a longer or shorter time of rest, rhythmic contractions, which continue regular a certain time for each part of the immersed muscle. Then occur periods of rhythmic contractions, separated by longer or shorter pauses, and often varying in character. These phenomena last a long time; with a coo